

IN THE CLAIMS:

Claims 1-5, 7-13, and 15-26 have been amended herein. All of the pending claims 1 through 26 are presented below. This listing of claims will replace all prior versions and listings in the application. Please enter these claims as amended.

1. (Currently Amended) A method for mitigating sidelobe artifacts in a ~~radiation~~ radiation-patterning process, comprising:

defining elements to be formed in a radiation-patterning tool as a function of a wavelength of radiation to be used to create desired patterns and resultant sidelobes;

calculating a diffraction ring about each of ~~said the~~ the elements;

identifying at least one location where one diffraction ring from one of ~~said the~~ the elements intersects another diffraction ring from another of ~~said the~~ the elements; and

forming at least one sidelobe inhibitor across ~~said the~~ the at least one location.

2. (Currently Amended) The method of claim 1 wherein a radius of ~~said the~~ the diffraction ring is about eight-tenths of ~~said the~~ the wavelength of radiation.

3. (Currently Amended) The method of claim 1 wherein ~~said the~~ the at least one sidelobe inhibitor has dimensions of about one-half ~~said of the~~ of the wavelength of ~~said the~~ the radiation.

4. (Currently Amended) The method of claim 1 wherein ~~said the~~ the at ~~least~~ least one location ~~comprising~~ comprises a plurality of locations and wherein forming at least one sidelobe inhibitor comprises:

defining an overlap range extending around each of ~~said the~~ the locations;

defining a common location in lieu of each of ~~said the~~ the locations when a portion of an overlap range from one of ~~said the~~ the locations is common with a portion of an overlap range from another one of ~~said the~~ the locations; and

forming sidelobe inhibitors across at least a portion of ~~said~~ the locations and ~~said~~ the common locations.

5. (Currently Amended) The method of claim 1 wherein ~~said~~ the radiation-patterning tool comprises a reticle.

6. (Original) The method of claim 1 wherein the radiation-patterning tool comprises a photomask.

7. (Currently Amended) A method of generating sidelobe inhibitors on a radiation-patterning tool, comprising:
defining elements to be formed in a radiation-patterning tool according to a defined wavelength of radiation intended to pass through ~~said~~ the elements to create desired patterns and resultant sidelobes proximate to ~~said~~ the desired patterns;
forming a mathematical description of ~~said~~ each of the elements including spatial orientations ~~thereof~~ thereof;
defining a mathematical description of a diffraction ring about ~~said~~ the mathematical description of each of ~~said~~ the elements;
identifying mathematical descriptions of locations where one mathematical description of a diffraction ring of one of ~~said~~ the elements intersects another mathematical description of a diffraction ring of another of ~~said~~ the elements; and
forming sidelobe inhibitors across ~~said~~ the radiation-patterning tool corresponding to at least one of ~~said~~ the mathematical descriptions of locations.

8. (Currently Amended) The method of claim 7 wherein each of ~~said~~ the mathematical descriptions of diffraction rings extends around a radius defined from a centroid of ~~said~~ the mathematical description of one of ~~said~~ the elements.

9. (Currently Amended) The method of claim 8 wherein a radius of ~~said the~~ mathematical description of diffraction ring is about eight-tenths of ~~said the~~ defined wavelength of radiation.

10. (Currently Amended) The method of claim 7 wherein ~~said the~~ sidelobe inhibitors have dimensions of about one-half ~~said the~~ wavelength of ~~said the~~ radiation.

11. (Currently Amended) The method of claim 7 further comprising:
identifying ~~proximity~~ a proximity of a first one of ~~said the~~ sidelobe inhibitors with at least one other of ~~said the~~ sidelobe inhibitors; and
when one or more sidelobe inhibitors are identified as more proximate than a predefined threshold with respect to ~~said the~~ first one of ~~said the~~ sidelobe ~~inhibitor~~ inhibitors,
identifying a common sidelobe inhibitor in lieu of ~~said first sidelobe inhibitor~~ ~~said the~~ one or more sidelobe inhibitors.

12. (Currently Amended) The method of claim 11 wherein the predefined threshold is about one-half of the defined wavelength of radiation to about one of the defined wavelength of radiation.

13. (Currently Amended) The method of claim 7 wherein ~~said the~~ radiation-patterning tool comprises a reticle.

14. (Original) The method of claim 7 wherein the radiation-patterning tool comprises a photomask.

15. (Currently Amended) A method for designing a mask for illuminating a pattern, comprising:
defining elements to be formed in ~~said the~~ mask;

calculating a diffraction ring about each of ~~said the~~ elements, each ~~said~~ diffraction ring including a radius coinciding with a location of sidelobes from a wavelength of radiation to create ~~said the~~ elements; and
forming a sidelobe inhibitor at at least one intersection where a diffraction ring from one ~~element~~ of the elements intersects a diffraction ring from another of ~~said the~~ elements.

16. (Currently Amended) The method of claim 15 wherein ~~said the~~ at least one intersection comprises a plurality of intersections and further comprising:
defining an overlap range extending around each of ~~said the~~ intersections;
defining a common intersection in lieu of each of ~~said the~~ intersections when a portion of an overlap range from one of ~~said the~~ intersections is common with a portion of an overlap range from another one of ~~said the~~ intersections; and
forming sidelobe inhibitors across at least a portion of ~~said the~~ intersections and ~~said the~~ common intersection.

17. (Currently Amended) The method of claim 15 wherein a radius of ~~said the~~ diffraction ring is about eight-tenths of ~~said the~~ wavelength of radiation.

18. (Currently Amended) The method of claim 15 wherein ~~said the~~ sidelobe ~~inhibitors have~~ inhibitor has dimensions of about one-half ~~said of the~~ wavelength of ~~said the~~ radiation.

19. (Currently Amended) A computer-readable media having computer-executable instructions thereon for determining the placement of sidelobe inhibitors relative to elements to be formed on a radiation-patterning tool, comprising:
calculating a diffraction ring surrounding each of a plurality of elements, ~~said the~~ diffraction ring coinciding with an approximate location of a sidelobe corresponding to a wavelength of radiation of ~~said the~~ radiation-patterning tool;

calculating an intersect of a first diffraction ring with others of ~~said~~ the diffraction rings; and identifying ~~said~~ the intersect as a location to place one of ~~said~~ the sidelobe inhibitors.

20. (Currently Amended) The computer-readable media of claim 19, wherein ~~said~~ identifying comprises:
identifying ones of intersects wherein placement of one sidelobe inhibitor results in an overlap with another one or more sidelobe inhibitors; and
identifying a common intersect in lieu of intersects resulting in overlap as a location to place one of ~~said~~ the sidelobe inhibitors.

21. (Currently Amended) The computer-readable media of claim 19, wherein ~~said~~ calculating a diffraction ring includes calculating a diffraction ring having a radius of about eight-tenths of ~~said~~ the wavelength of radiation.

22. (Currently Amended) The computer-readable media of claim 19, further including forming ~~said~~ the sidelobe ~~inhibitor~~ inhibitors to have dimensions of about one-half ~~said~~ the wavelength of ~~said~~ the radiation.

23. (Currently Amended) A mask for exposing a resist-covered wafer in a radiation-patterning process, comprising:
transmissive elements corresponding to features on ~~said~~ the wafer to be exposed, ~~said~~ the elements formed as a function of a wavelength of radiation to be used for exposing; and
one or more sidelobe inhibitors to suppress sidelobes of ~~said~~ the wavelength of radiation, ~~said~~ the sidelobe inhibitors arranged from a calculation of intersections of diffraction rings around each of ~~said~~ the elements.

24. (Currently Amended) The mask of claim 23 wherein a radius of ~~said~~ the diffraction ring is about eight-tenths of ~~said~~ the wavelength of radiation.

25. (Currently Amended) The mask of claim 23 wherein ~~said~~ the sidelobe inhibitors have dimensions of about one-half ~~said~~ of the wavelength of ~~said~~ the radiation.

26. (Currently Amended) The mask of claim 23 wherein ~~said~~ the one or more sidelobe inhibitors are further arranged to avoid overlap of ~~a said sidelobe inhibitors~~ thereof and, when overlap is predicted to occur, two or more overlapping sidelobe inhibitors are merged into a single sidelobe inhibitor arranged central to ~~said~~ the overlap of ~~said~~ the sidelobe inhibitors.